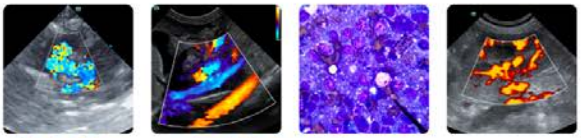

PATIENT

Nalu Baxter

SPECIES

Canine

BREED

Shih Tzu x

SEX

Neutered Male

AGE

12 Years 8 Months

WEIGHT

27.6 lbs

INTERPRETED BY

Eric Lindquist, DMV, DABVP (CFM), Cert. IVUSS

IMAGING PERFORMED BY

Shari Reffi, CVT

HOSPITAL NAME

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REFERRING VET

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INVOICE

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PRESENTING CLINICAL SIGNS

Elevated LE's. Grade 4/6 heart murmur

Current meds: Vetmedin 5mg 1/2tab bid; Furosemide 50mg 1/2tab bid

Abnormal PE/Chem/CBC/UA Results: Elevated LE's

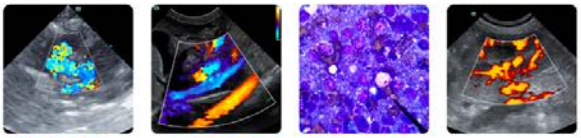
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (M-Mode)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	Up to 1.6	28-40	40-100	<0.6
PATIENT	5.6	2.4	1.2	1.5	29	57	0.28
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT** (lbs)	**LAD** LA MAX 4 Chamber	**LVIDd** Avg; 2D and m-mode short axis (cm)	**LVIDs** Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6				
PATIENT	177	1.2	0.7	27.6	3.4	3.2	--

E-wave velocity = 1.2

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 different LA measurement methods. Chamber volumes and echogenicity were normal. The cranial and caudal **mitral** valve leaflets presented vegetative thickening consistent with endocardiosis. Doppler indicated measurable insufficiency. Prolapse of the anterior mitral valve leaflet noted. The **left ventricle** presented thicknesses with linear contour and was not dilated nor restricted. The **myocardium** presented normal echogenicity without subjective evidence of significant fibrotic or ischemic disease. **Contractility** of the ventricular walls was adequate and in normal range for this patient evidenced by the fractional shortening measurement and subjective evaluation of the different regions of the myocardium. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** insufficiency also noted. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). No visible **pericardial** or free pleura fluid was noted. No echographically detectable evidence of infiltrative disease was visible. The cranial **mediastinum and pericardial regions** were free of masses in the visible window. Hepatic veins were not dilated.



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Urinary System

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes were noted. Ureteral papillae were normal.

The prostate was uniform at 0.59 cm.

The **kidneys** revealed largely normal size and structure, corticomedullary definition and ratio (cortex 1/3 of medulla) were essentially maintained with some age-related loss of curvilinear patterns regarding the capsule and C/M junction. The cortices presented largely uniform texture with some increased echogenicity expected for his age patient. Medullary structure differed distinctly from that of the cortex and no evidence of pelvic dilation was present. The left kidney measured 4.6 cm. The right kidney measured 4.9 cm. Slight cortical mineralizations and striations noted in both kidneys, degenerative change. The dorsal cortex of the right kidney revealed coalescing cortical nodules, a grouping of which measured 1.7 cm.

Adrenal Glands

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. Left measured 0.55 cm at the cranial pole and 0.53 cm at the caudal pole. Right measured 0.52 cm at the caudal pole and 0.82 cm at the cranial pole.

Spleen

The **spleen** revealed a focal hypoechoic expansive nodule measuring 0.86 cm.

Liver

The **liver** images from right and left intercostal as well as subcostal views revealed subjectively normal liver size, contour, and structure. Some age-related parenchymal remodeling was noted but likely not clinically significant at this time. Vascular and biliary tracts were of normal volume and no evidence of congestion was noted. The gallbladder presented some dependent debris with essentially normal contour. The cystic and common bile ducts were normal. No overt evidence of active inflammatory, infiltrative or regenerative pathology was noted but should be paired with current or past LE elevations regarding any clinical significance to this presentation. The hepatic lymph nodes were unremarkable.

Gastrointestinal

There was some residual chyme and gas was noted in the **stomach**, yet not pathological. This is consistent with end post prandial presentation. Transit of chyme into the small intestine was normal. Curvilinear patterns were maintained throughout the GI tract. No evidence of pathology. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Some parenchymal remodeling, however, with mild deviation from curvilinear normalcy was observed. Pancreatic duct and capsular irregularities were present consistent with age related changes. If pain

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upon imaging (+ Murphy sign) was present or if the patient is focally painful in subxyphoid palpation then low-grade smoldering chronic pancreatitis should be suspected.

ULTRASONOGRAPHIC FINDINGS

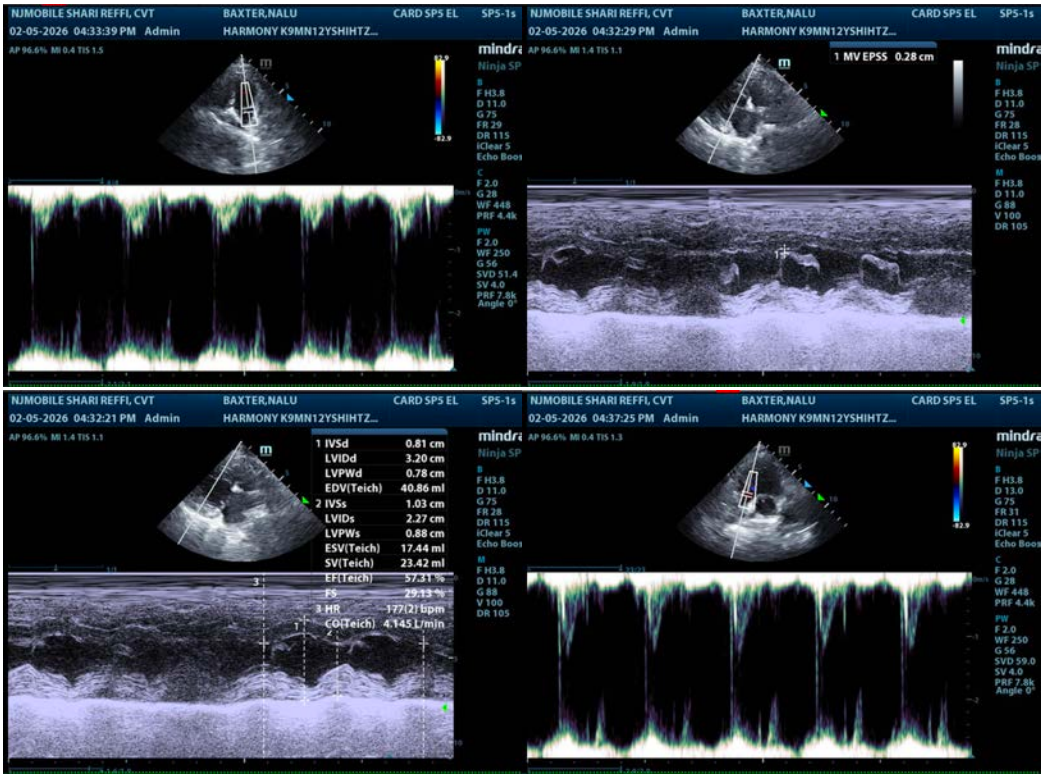
- Compensated mitral insufficiency with prolapse.
- Splenic nodule – emerging round cell neoplasia, hemangiosarcoma, nodular hyperplasia all possible.
- Right renal cortical nodules, possible infarct or emerging neoplastic event.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Continuation of the current protocol recommended with Furosemide and Vetmedin. If systolic blood pressure is >160, then ACE inhibitor therapy would be indicated.

Proactive splenectomy could be justified in this patient. There is mild anesthetic risk with the mitral valve prolapse. Otherwise, recheck sonogram of the abdomen (primarily the spleen and right kidney) could be considered in approximately 10-14 days to assess for any growth +/- ultrasound guided FNA of the splenic nodule and right renal cortical nodule. These are somewhat challenging procedures to obtain a definitive cytological diagnosis with ultrasound guided measures. Surgical intervention with splenectomy and inspection of the right renal cortex would be optimal in this patient.

Chest radiographs warranted to assess for comorbidities or metastatic disease. Recheck echocardiogram in 6 months, earlier if any clinical signs or murmur grade increase occurs.



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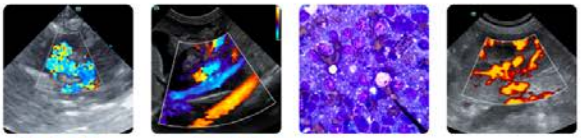

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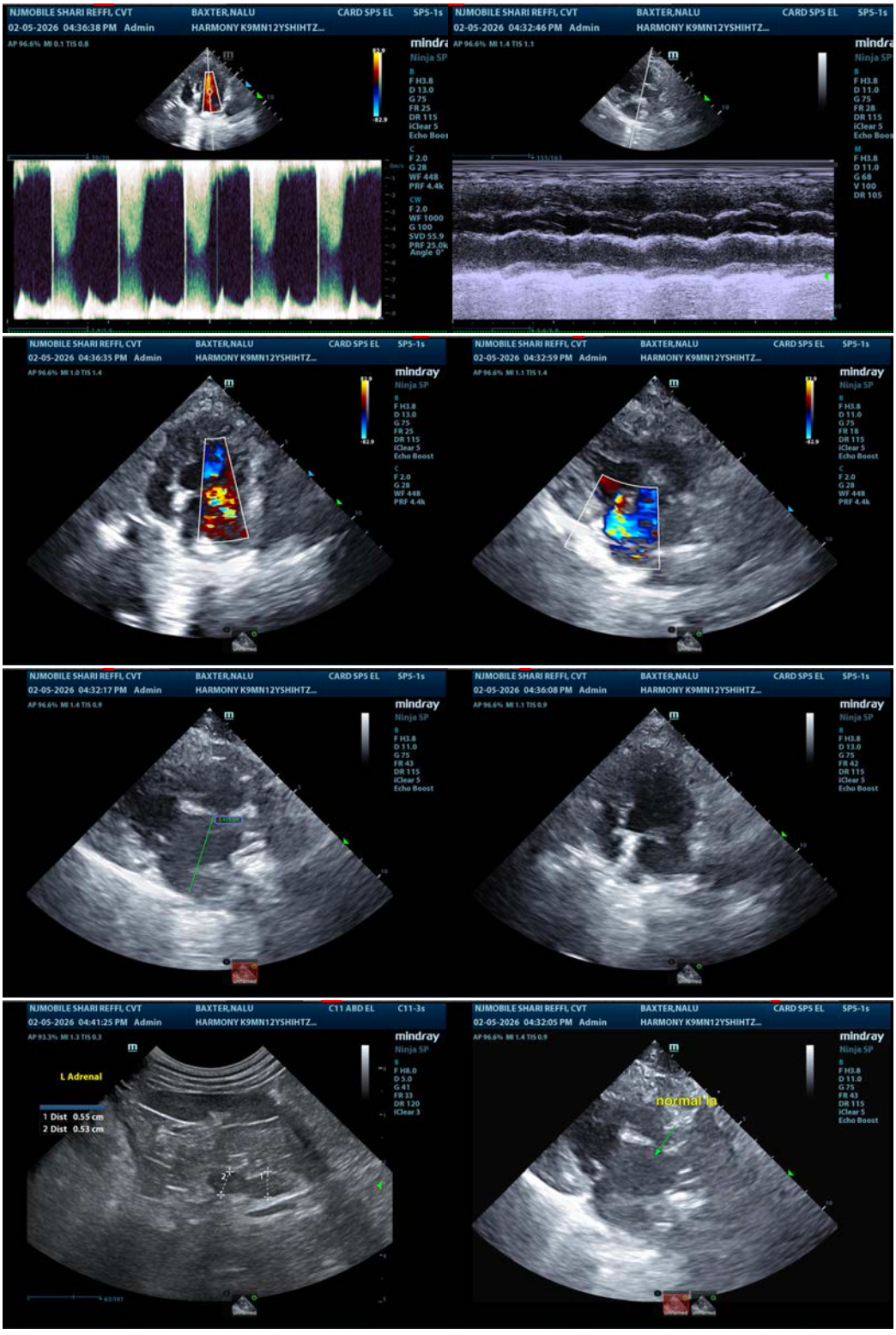

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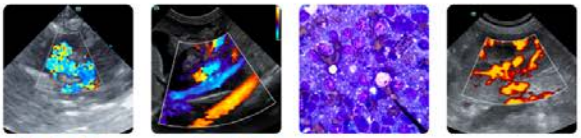

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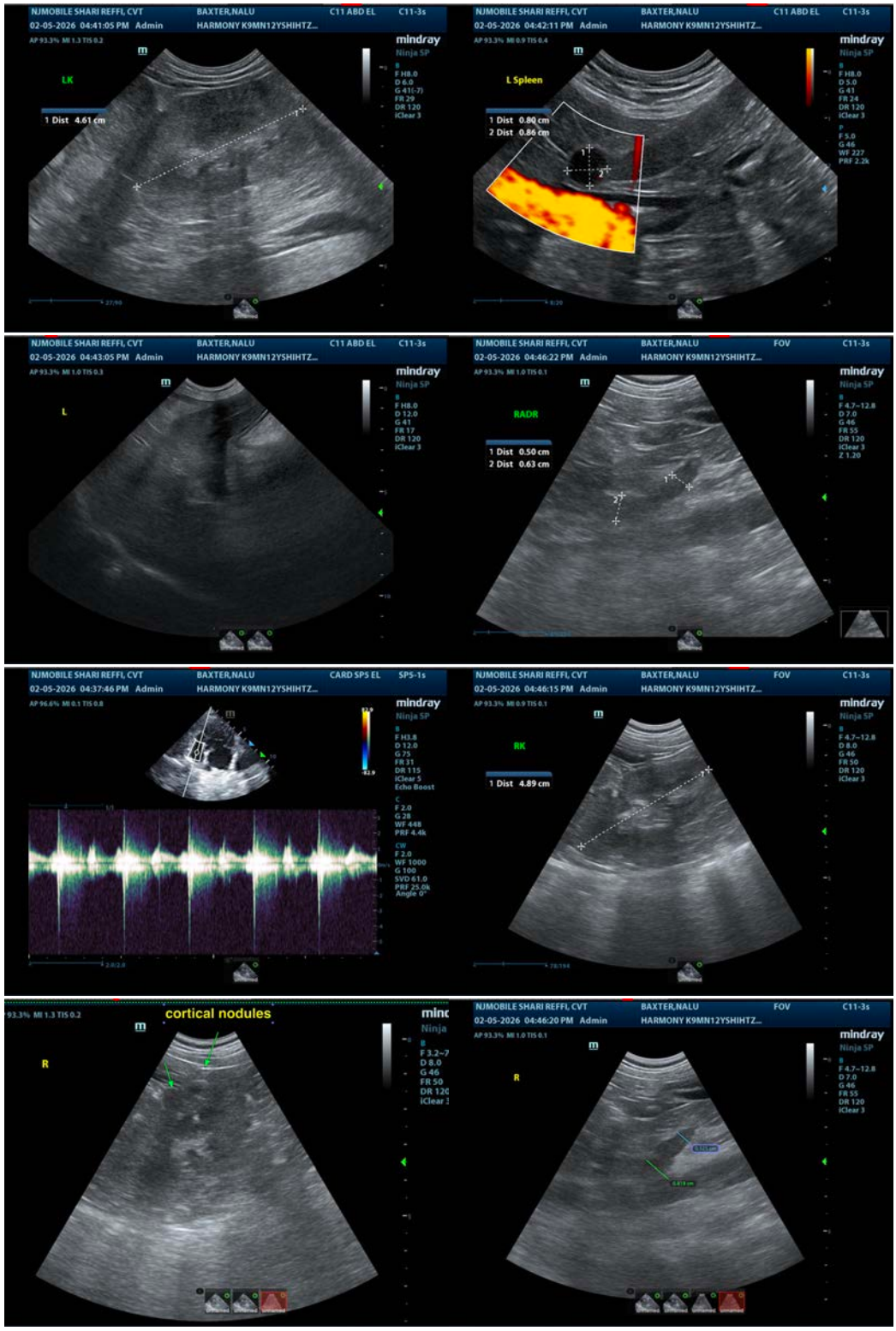

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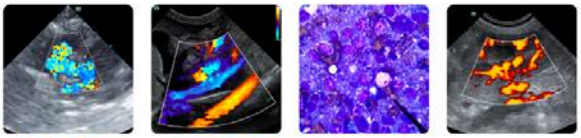

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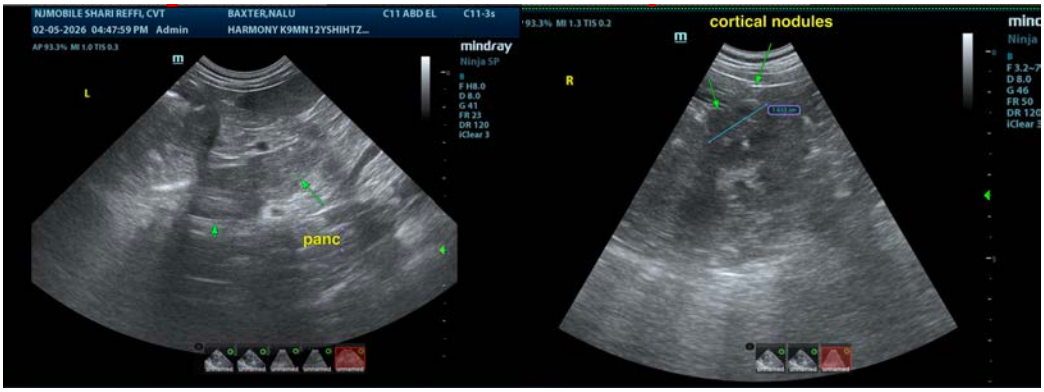

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

Eric Lindquist, DMV, DABVP(CFM), Cert. IVUSS,
CEO, Owner, Founder -- SonoPath.com
info@SonoPath.com